

What is claimed is:

1. A backpressure regulator comprising:
 - a hinged arm having a closed position; and
 - a movable stop shaped to cover a port connected to a pressurized conduit, the stop being held by a retainer attached to the arm, and the stop being positioned adjacent to the port when the arm is in the closed position,5 wherein the arm is away from the closed position when the pressure in the conduit exceeds a set point, and the arm is in the closed position when the pressure in the conduit is less than the set point.
- 10 2. A backpressure regulator according to claim 1 further comprising a counter mass adjustably attached to the arm.
- 15 3. A backpressure regulator according to claim 2, wherein the set point is determined by the position of the counter mass relative to the arm.
4. A backpressure regulator according to claim 2, wherein the counter mass is adjustably attached such that the lowest set point is substantially less than or equal to 10 psig.
- 20 5. A backpressure regulator according to claim 2, wherein the counter mass is adjustably attached such that the highest set point is substantially greater than or equal to 17 psig.
- 25 6. A backpressure regulator according to claim 1, further comprising a specifically designed leak vent at least when the arm is in the closed position.
7. A backpressure regulator according to claim 1, wherein the movable stop is substantially ball-shaped.
- 30 8. A backpressure regulator according to claim 1, wherein the regulator is utilized in a vapor compression distillation system.

9. A backpressure regulator according to claim 1 further comprising a vessel having an orifice connected to the pressurized conduit, wherein the port is an opening of the orifice and the arm is hinged to the pressure vessel.

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10. A backpressure regulator according to claim 9, wherein the port includes a notch to release fluids from the pressurized conduit when the arm is in the closed position.

11. A backpressure regulator according to claim 9, wherein the orifice has an opening to 10 release fluids from the pressurized conduit at least when the arm is in the closed position

12. A backpressure regulator according to claim 9, wherein the vessel includes a drain orifice.

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